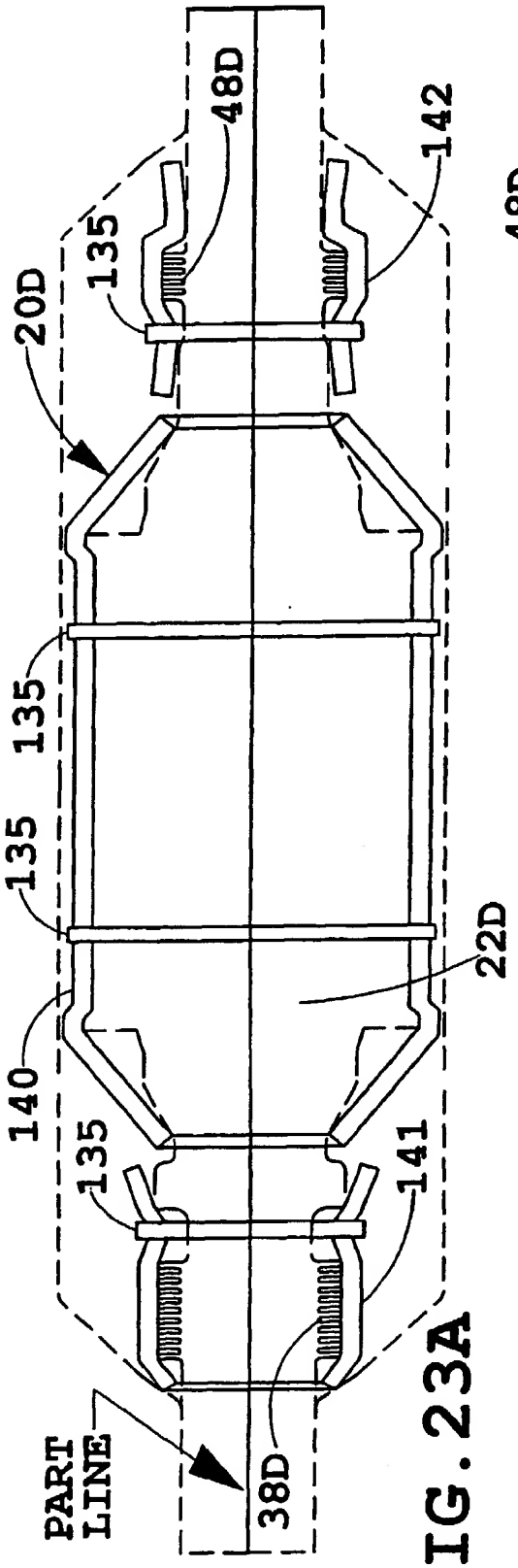

FIG. 23A

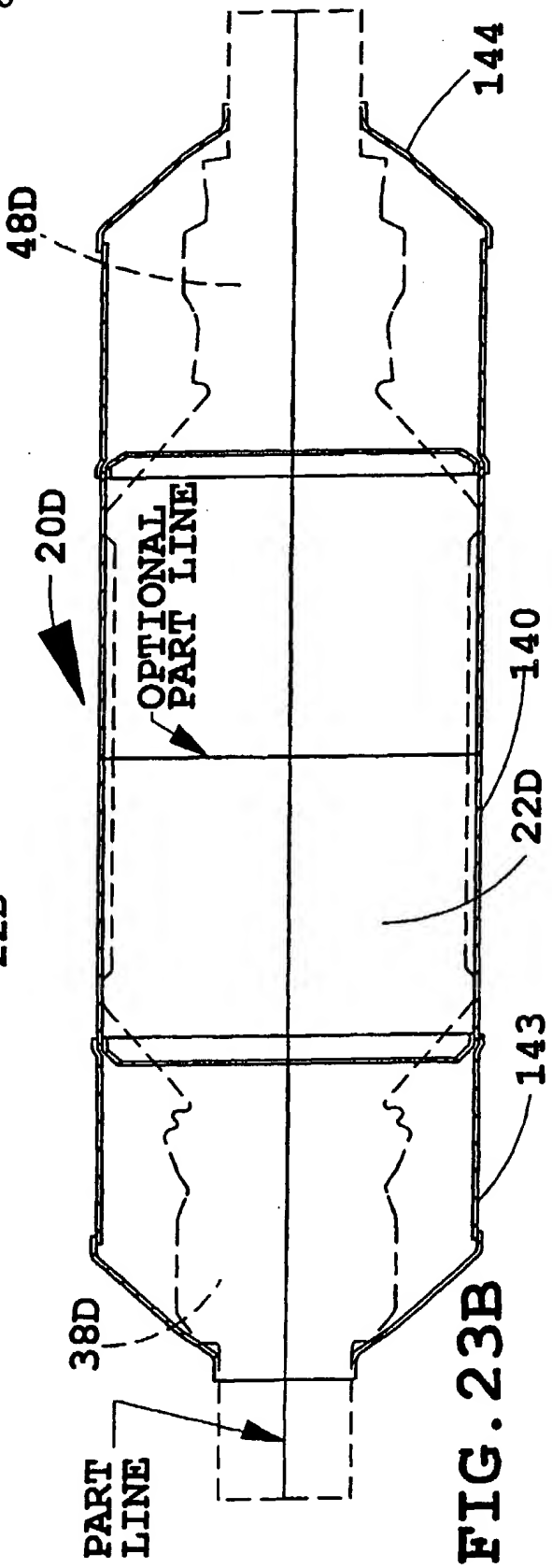

FIG. 23B

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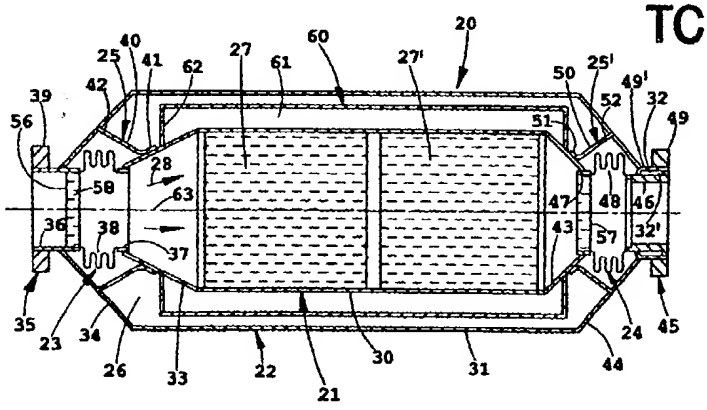
[Continued on next page]

(54) Title: VACUUM-INSULATED EXHAUST TREATMENT DEVICES, SUCH AS CATALYTIC CONVERTERS, WITH PASSIVE CONTROLS



(57) Abstract: A thermally-activated exhaust treatment device, such as a catalytic converter (20), for vehicles includes a core having an inner housing (21) and a catalytic material (27, 27'). A jacket includes an outer housing (22) enclosing the inner housing (21) but characteristically not contacting the inner housing (21). The inner and outer housings (21, 22) includes walls (30, 31) forming a vacuum-drawn sealed insulation cavity (26) around the inner housing (21). A temperature-activated variable insulator device is positioned within the outer housing (22) and includes a hydrogen source (32) and controls for controlling the variable insulator device. A vacuum-maintenance device is incorporated into the insulation cavity (26), and includes a small container, getter material positioned in the container, a porous member allowing gas in the insulation cavity (26) to communicate with the getter material. A multi-layered radiation shield is positioned in the vacuum space and is loosely coupled to the inner housing (21). A vacuum detector includes a visible indicator of the vacuum in the insulation cavity (26).

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